



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/644,831	08/21/2003	Kenichiro Asano	Q75981	6158

23373 7590 11/19/2004

SUGHRUE MION, PLLC  
2100 PENNSYLVANIA AVENUE, N.W.  
SUITE 800  
WASHINGTON, DC 20037

EXAMINER

ASSAF, FAYEZ G

ART UNIT PAPER NUMBER

2872

DATE MAILED: 11/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/644,831

Applicant(s)

ASANO ET AL.

Examiner

Fayez G. Assaf

Art Unit

2872

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

Art Unit: 2872

**DETAILED ACTION**

***Specification***

The abstract of the disclosure is objected to because it exceeds 150 words. Correction is required. See MPEP § 608.01(b).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zheng (US 6,347,170 B1).

Zheng discloses an optical device comprising: a first refractive index distribution type lens having a first end face and second end face, said first end face being ground diagonally (35 of Fig. 1A); first and second ports (15 and 20 of Fig. 1A) connected to the first end face of said first refractive index distribution type lens; an optical functional element (40 of

Art Unit: 2872

Fig. 1A) connected to the second end face of said first refractive index distribution type lens; a second refractive index distribution type lens (50 of Fig. 1A) having a third end face and a fourth end face, the fourth end face being ground diagonally and the third end face being placed so as to face the second end face of said first refractive index distribution type lens via said optical functional element (see Fig. 1A), and a third port (65 of Fig. 1A) connected to the fourth end face of said second refractive index distribution type lens.

Zheng discloses the claimed invention including the device being symmetric around the functional element; however, the reference does not expressly teach the optical path length from said first port to said second port after reflection by said optical functional element, being equal to an optical path length from said first port to said third port after transmission through said optical functional element.

However, such an arrangement can be achieved by routine experimentation.

It would have been obvious, at the time the invention was made, too a person having ordinary skill in the art to arrange for the optical path to be equal in order to have an equal optical energy loss in the system, i.e. same signal strength between input and output.

Art Unit: 2872

Regarding claim 2, Zheng discloses the length along a center axis of said first refractive index distribution lens being equal to a length along a center axis of said second refractive index distribution type lens (see Fig. 1A).

Regarding claim 3, Zheng discloses the tilt angle of said first end face is equal to a tilt angle of said fourth end face (see Fig. 1A).

Regarding claim 4, Zheng discloses the length along a center axis of said first refractive index distribution type lens having the first and second end faces being equal to a length along a center axis of the second refractive index distribution type lens having the third and fourth end faces and a tilt angle of the first end face is equal to a tilt angle of said fourth end face, wherein each of the first and second refractive distribution type lenses has a shortest side edge and a longest side edge (i.e. the inclined surface), and positions of the shortest side edges of the first and second refractive index distribution type lenses and positions of the longest side edges of the first and second refractive index distribution type lenses are arranged respectively on the same side of the optical device (see Fig. 1A).

Regarding claim 5, Zheng discloses a multiplexer/demultiplexer comprising: a first collimator lens

Art Unit: 2872

having a first end face and a second end face (110 of Fig. 1B); a second collimator lens (160 of Fig. 1B) having a third end face and a fourth end face; an optical multiplexer/demultiplexer element (105 of Fig. 1B) inserted between said second face and said third end face; first and second ports (140 and 145) arranged with respect to said first end face of said first collimator lens; and a third port (180 of Fig. 1B) arranged with respect to said fourth end face of said second collimator lens, wherein a first optical path is from said first port to said second port after reflection by said optical multiplexer/demultiplexer element, a second optical path is from said first port to said third port after transmission through said optical multiplexer/demultiplexer element, lights with different wavelengths are combined and separated via said first and second optical paths and said optical multiplexer/demultiplexer element.

Zheng discloses the claimed invention including the device not being symmetric around the WDM filter; however, the reference does not expressly teach the first optical path length being different from the second optical path length.

However, such an arrangement can be achieved by routine experimentation.

Art Unit: 2872

It would have been obvious, at the time the invention was made, to a person having ordinary skill in the art to arrange for the optical paths to be different (the general case) in order to accommodate for different lenses with different dispersion properties to be used in the WDM device.

Regarding claims 6 and 11, Zheng discloses the first and second collimator lenses being refractive index distribution type lenses.

Regarding claim 7, Zheng discloses the first end face being placed to face diagonally ground faces of said first and second ports and the fourth end face being placed to face a diagonally ground face of said third port, said first and fourth diagonally ground faces are arranged to be parallel to each other and the optical path length of said first and second optical paths being different (see Fig. 1B).

Regarding claim 8, Zheng inherently discloses the light of the wavelength whose focal length in a refractive index distribution type lens being longer passes through the longer of said first and second optical paths.

Regarding claim 9, Zheng discloses the lengths of said first and second refractive index distribution type lenses being 0.23 to 0.25 times the pitch length of said wavelength with the

Art Unit: 2872

longer focal length in said refractive index distribution type lens (claims 6 and 7).

Regarding claim 10, Zheng discloses the first and second ports being respective optical fibers of a dual fiber pigtail (see Fig. 1B), and an end face of said dual fiber pigtail on a side facing said first side of said first collimator lens is ground diagonally with a predetermined tilt angle, and said third port is an optical fiber of a dual fiber pigtail, and an end face of said dual fiber pigtail facing said fourth side of said second collimator lens is ground diagonally with a predetermined tilt angle.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Duck et al. (US 5,799,121)

Fukuzawa et al. (US 6,782,162 B2)

Brun et al. (US 2002/0081067 A1)

### **Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fayez G. Assaf whose telephone number is (571) 272-2307. The examiner can normally be reached on 8-5 M-F.



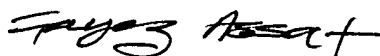
Art Unit: 2872

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on (571) 272-2312. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

FA

15/11/04



FAYEZ G. ASSAF  
PRIMARY EXAMINER